



Because maths matters!

Welcome to the MEI conference 2026

Sponsored by

CASIO[®]

Data Collection!

**Totally anonymous, height
and shoe size data**

Data science and statistics at the KS2-3 Transition

Alison Hopper and Ian Andrews



Outcomes/ Aims

- Consider how Data Science fits with the current curriculum
- Discussing strategies to promote the thinking of Data Science

Order these questions into a progression

- Which year groups?
- Where do the Key Stages change?
- Which questions are related to data science?
- Which ones aren't and what are they?

What's missing? Why is it important?

Three definitions:

- Data handling
- Statistics
- Data Science

What's the same and what's different?



Definitions

Data Handling

- “is the process of managing and working with data in a structured and meaningful way. It involves collecting data from various sources, storing it securely, processing it to extract useful information, and presenting it in a format that is easy to understand.” (.gov.uk, June 2026)
- “refers to the process of gathering, recording and analysing information” (Twinkl, 2026)

Definitions

Statistics

- “the science of using information discovered from collecting, organizing, and studying numbers” (Cambridge dictionary, June 2026)
- “transforms data into meaningful information.” (Michingan Tech)
- “the science of collecting, analyzing, presenting, and interpreting data” (Brittanica encyclopaedia)

Definitions

Data Science

- “a field of study that uses scientific methods, processes, and systems to extract knowledge and insights from data” (Harvard, 2026)
- combines math and statistics, specialized programming, advanced analytics, artificial intelligence (AI) and machine learning with specific subject matter expertise to uncover actionable insights hidden in an organization’s data. These insights can be used to guide decision making and strategic planning. (IBM, 2026)
- “the use of scientific methods to obtain useful information from computer data, especially large amounts of data” (Cambridge dictionary, 2026)

Essentially, all the same!

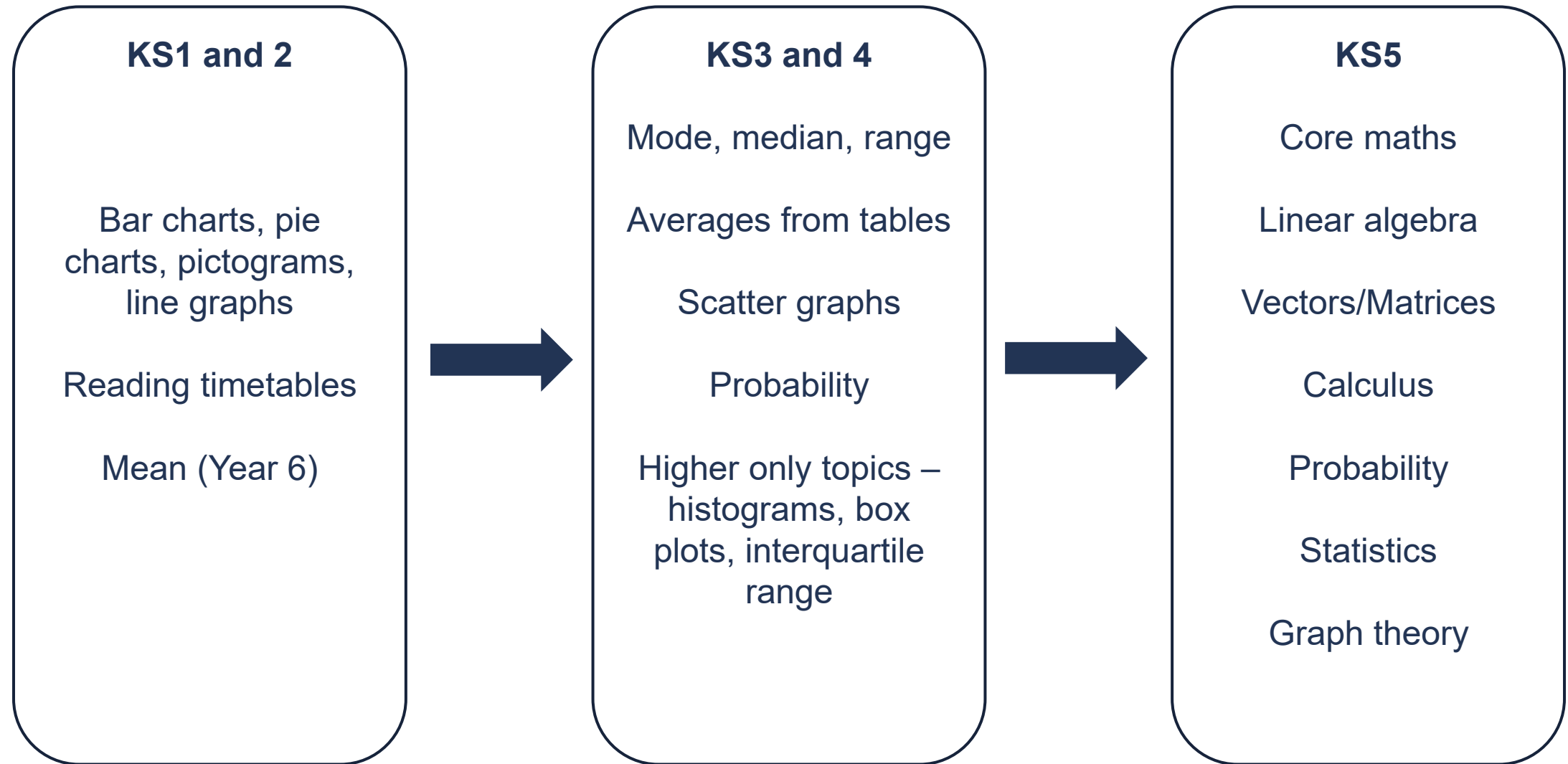
1. Define the question
2. Collect data
3. Analyse and/or visualise
4. Make conclusions and gather insights
5. Make decisions

Data Science

- Understanding **context**
- **Statistical** knowledge
- **Technology** skills



Current curriculum journey to data science



Using Technology - DESMOS

- Easy to use
- Quick to gather summary statistics and graphs
- Enables focus on context and meaning rather than calculation

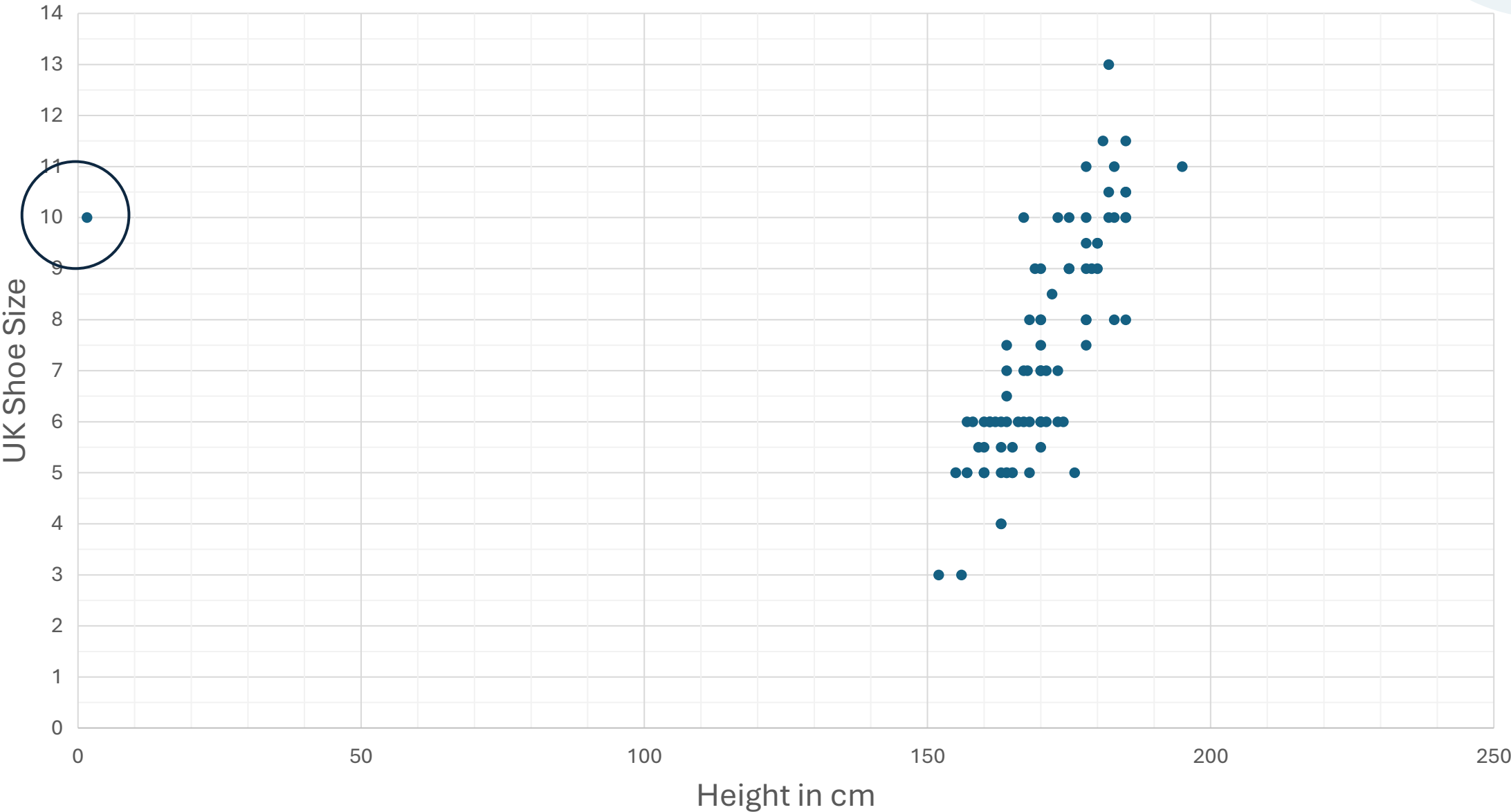




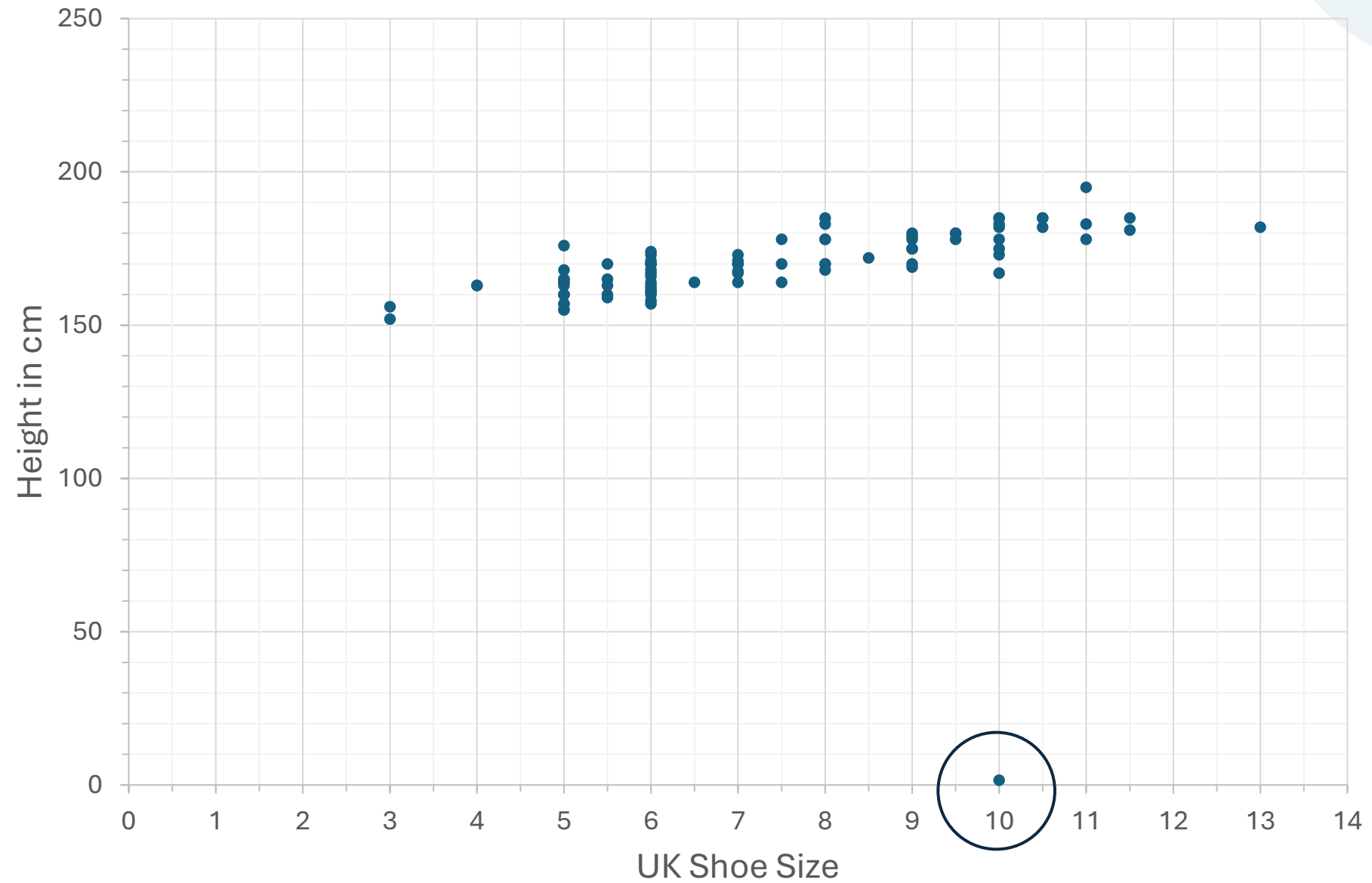
Data isn't perfect – it can be messy.



Height in cm and shoe size



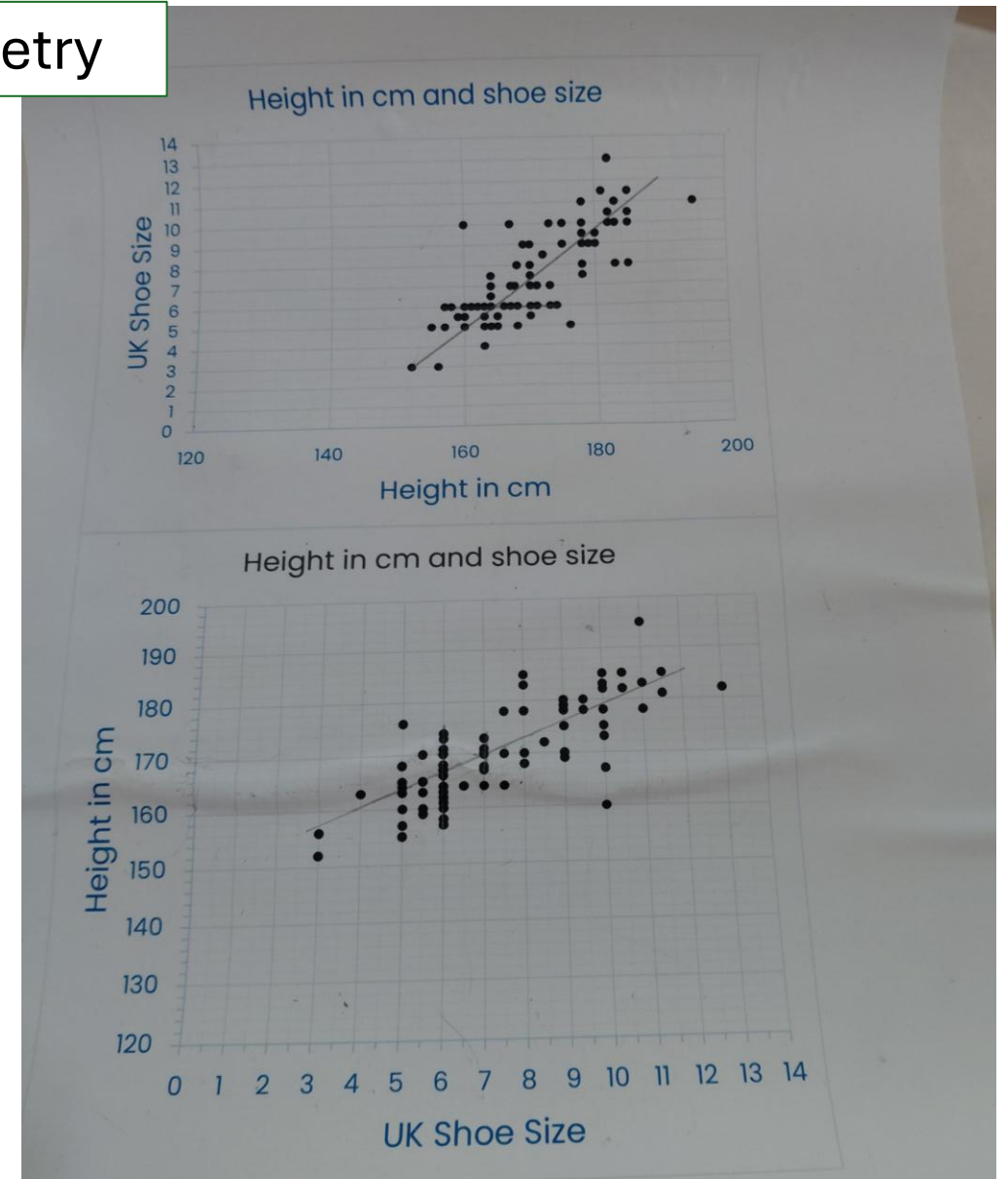
Height in cm and shoe size





Symmetry

1. What is the smallest shoe size you would expect for someone 1.75m tall?
2. What is the largest shoe size you would expect for someone 1.6m tall?
3. What is the tallest you would expect for a person to have size 6 shoes?
4. What is the shortest you would expect for a person to have size 10 shoes?
5. What is the average height of people with size 8 shoes?
6. What is the average shoe size of people who are 170 cm tall?
7. Which shoe size has the greatest range of heights of people?
8. Can you tell how tall someone is from their shoe size?
9. Is this information useful? Who might find it useful?



Which presentation do you prefer?

8. 10
8. NO You could estimate percentage

6) Yes because
you can figure
out the average
weight.

8. Can you tell how tall someone is from their shoe size?

8. No because I am taller than
people who have bigger feet
than me.

9. Is this information useful? Who might find it useful?

9. This information was useful to
~~some~~ somebody who is selling
designing a shoe

- A hooded waterproof jacket
- Waterproof over-trousers
- A pair of wellington boots from a trusted brand
- Supplied in a range of sizes so schools can match kit to children

9. so you can use it in life
so you can estimate you height by your shoes

What else could we do with or ask about this data?

This table shows the distances Kirsty cycled last week.

Day	Home to school (4.3 miles)	School to home (4.3 miles)	School to tennis (2.6 miles)	Tennis to home (3.1 miles)
Monday	✓	✓	—	—
Tuesday	✓	✓	—	—
Wednesday	✓	—	✓	✓
Thursday	✓	✓	—	—
Friday	✓	—	✓	✓

Tell the story of Kirsty's week.

What might Kirsty do at the weekend?

Why doesn't Kirsty go home on a Wednesday and Friday?

Can we do better than this?

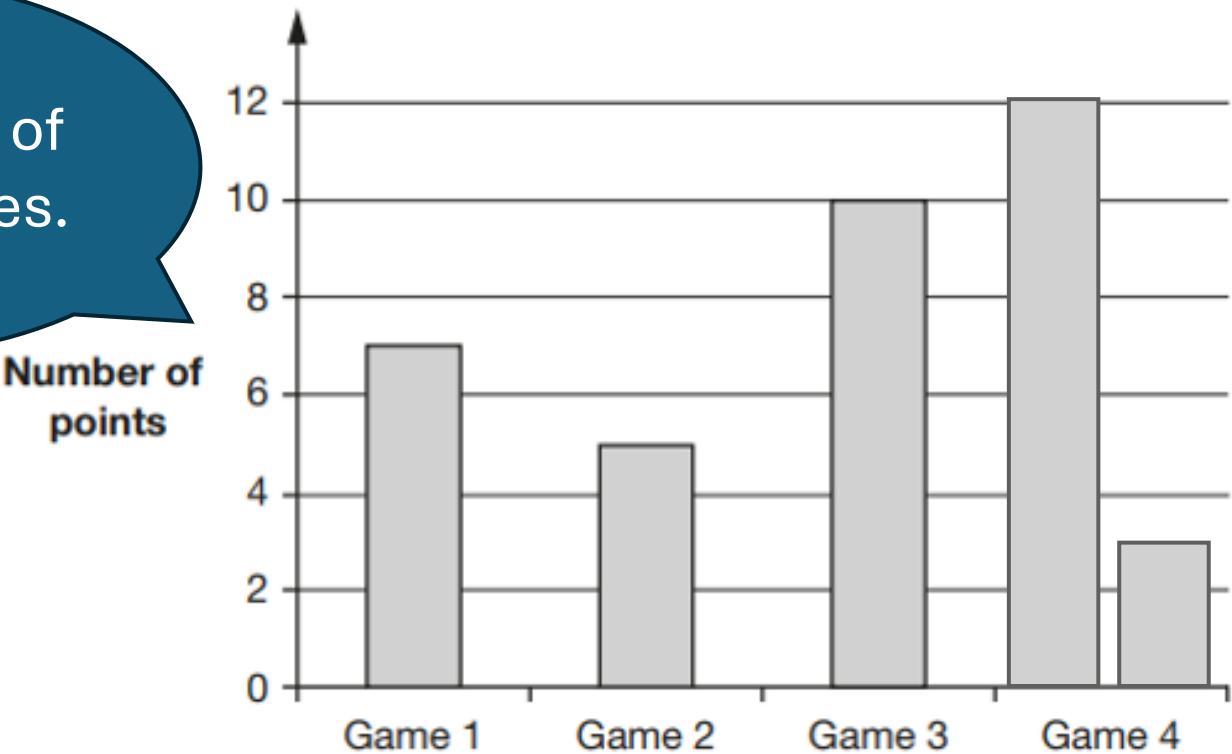
What is the total distance Kirsty cycled last week?

What else could we do with or ask about this data?

Layla plays basketball.

This graph shows how many points she scored in her first 3 games.

Tell the story of these matches.



What might happen in Game 4?

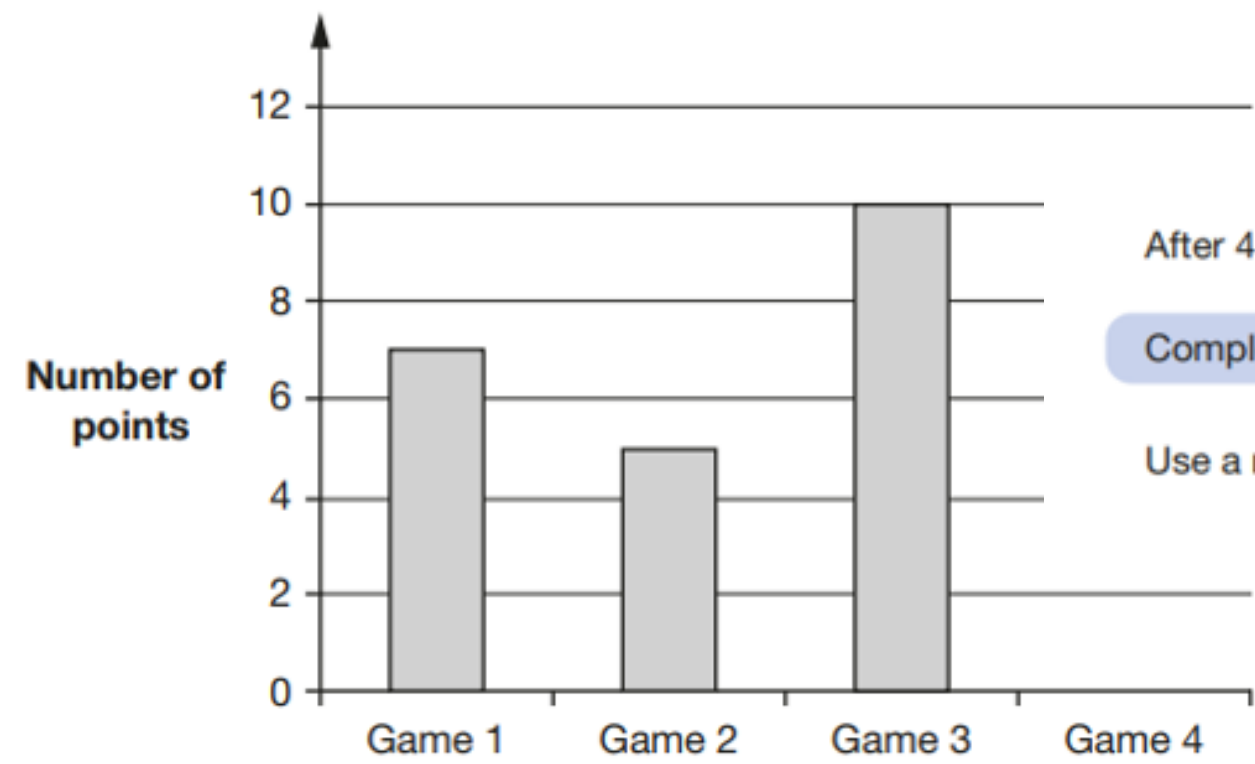
How could you explain each of these bars for Game 4?

What else could we do with or ask about this data?

What question do you think they asked?

Layla plays basketball.

This graph shows how many points she scored in her first 3 games.



After 4 games, Layla had scored a total of 25 points.

Complete the graph.

Use a ruler.

What else could we do with or ask about this data?

What would impact the number of planes landing on a particular day?

Number of planes landing between 10am and 2pm over ten days in January.

Day	1	2	3	4	5	6	7	8	9	10
Number of planes	148	151	147	155	153	147	155	102	151	154

What could you say about the weather over these ten days?

Is there a day you would rather not have travelled? Why?

What else could we do with or ask about this data?

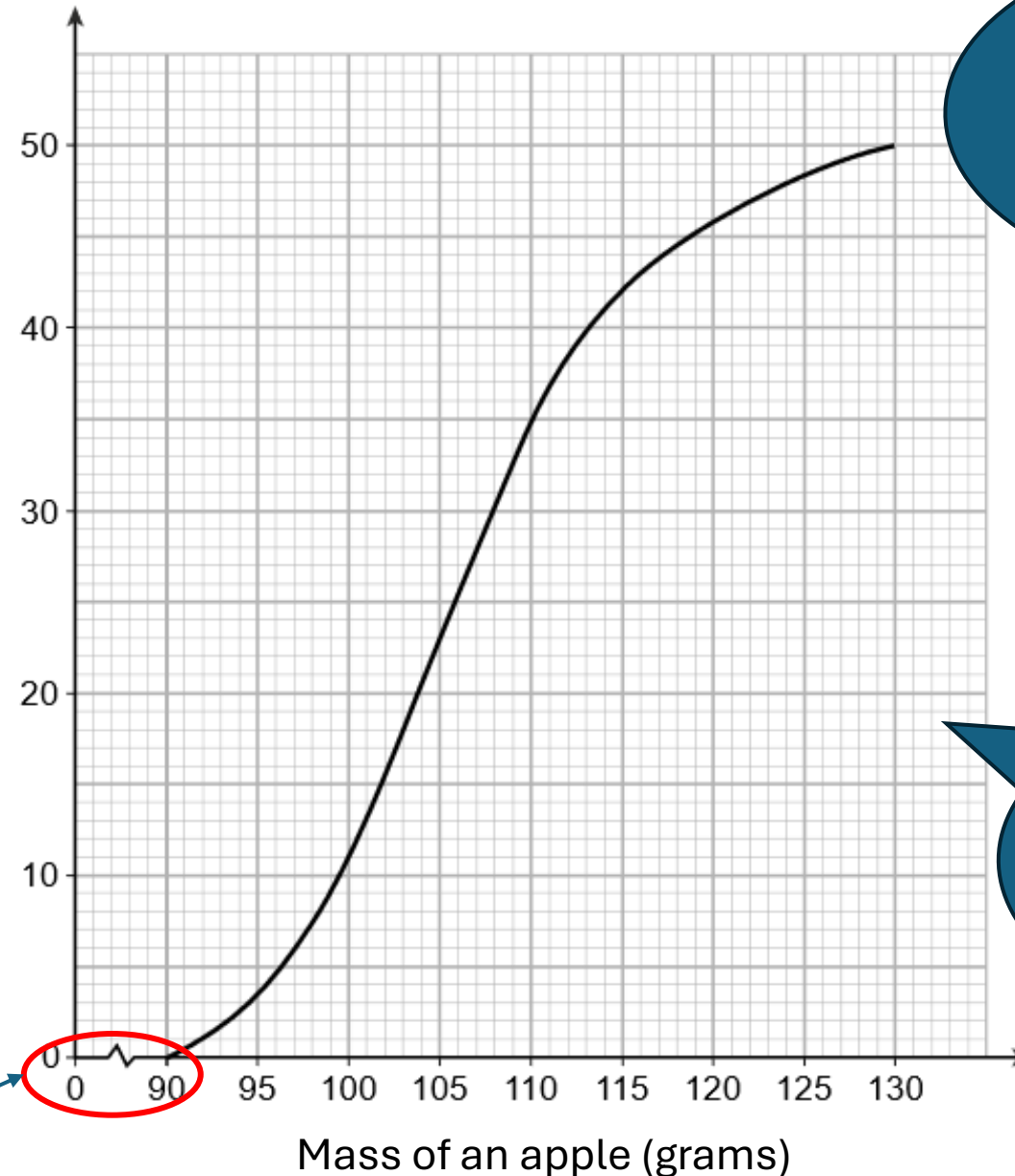
Cumulative frequency

Estimate the average mass of an apple.

What can you say about these apples?

Which of these apples would you find in the shops?

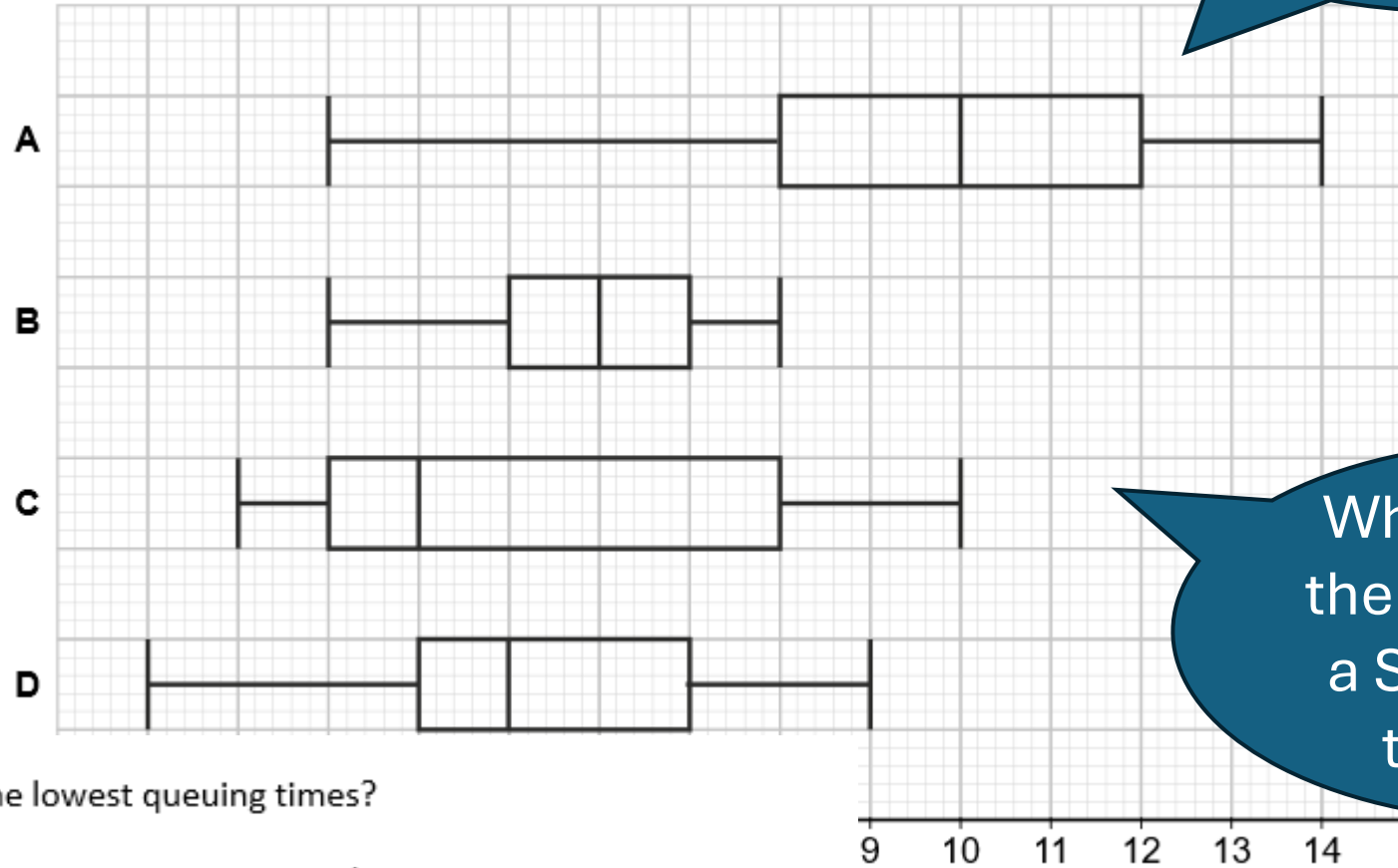
What does this indicate?



Where would you go shopping? Why?

Supermarket queuing times

Is the management happy at Supermarket A?



What would be the ideal plot for a Supermarket to aim for?

On average, which supermarket had the lowest queuing times?

Supermarket:

Reason: It has the lowest average

(2 marks)

What else could we do with or ask about this data?

Propulsion Type	Region	Engine Size	Mass	CO ₂	Particulate Emissions
2	London	1896	1533	154	0.04
2	North West	1896	1423	146	0.029
2	North West	1896	1353	138	0.025
2	South West	1998	1547	159	0.026
2	London	1896	1388	138	0.025
2	South West	1896	1214	130	0.011
2	South West	1896	1480	146	0.029
2	South West	1896	1413	146	0.024
2	South West	2496	1695	192	0.034
2	South West	1422	1251	122	0.025
2	South West	1995	2075	175	0.034
2	London	1896	1285	140	0.036
2	North West	1896	0	146	

What is over or under represented?

What do you notice about the bottom row?

Are mass and CO₂ connected?

Considerations

- Probability not in the Primary NC
- Under whose remit does Data Science fall in Primary schools?
- Maths curriculum has a Thread of Statistics – is this seen as data?

From KS2 PoS for Computing

‘Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, **including collecting, analysing, evaluating and presenting data and information.**

Opportunities in KS2 and 3



- MEI 'Exploring Data with Technology' resources for KS3 and 4
- Data we've collected – Desmos example
- Possible contexts for developing thinking for Data Science – story telling from data
- Questioning, modelling, predicting
- Sorting and classifying – tree diagrams – sorting primes, squares
- One word story games – be your own chatbot!